

Tm 2.6

ENABLING VEHICLE INTERACTION WITH
TRAFFIC MANAGEMENT



2016

About TM 2.0

The TM 2.0 ERTICO Platform originated in 2011 by TomTom and Swarco and was formally established on 17 June 2014 during the ITS Europe Congress in Helsinki. It now comprises 30 members from all ITS sectors focusing on new solutions for advanced active traffic management.

The platform aims to agree on common interfaces, principles and business models which can facilitate the exchange of data and information from the road vehicles and the Traffic Management and Control Centres (TMC), and back, improving the total value chain for consistent traffic management and mobility services as well as avoiding conflicting guidance information on the road and in the vehicles.

TM 2.0 in 2016

The work of the task forces (TFs) in 2015-2016 strongly depended and relied on those of the previous years. The TFs of 2014-2015 have identified key topics for discussion and analysis and have helped advance the TM 2.0 platform to where it is now and where we wish to be tomorrow. Task forces 2014-2015:

1. Viability analysis and recommendations
2. Barriers and enablers
3. Principles for data
4. Deployment steps (ongoing to 2016)

Task forces 2015-2016:

1. Quantification of benefits
2. Value proposition for TM 2.0 concept
3. Exchange of traffic management plans (TMPs)
4. Role of Automation in traffic management
5. Deployment steps



What our members see as being the value of TM 2.0

"TM 2.0 will enable the provision of innovative services and may improve human and goods mobility in ways beyond today's imagination, taking into account all new trends including automation and green mobility."

Angelos Amditis, ICCS



"Public and Private stakeholders are joining forces to complement and connect existing traffic management plans which will ensure a higher level of service in terms of increased traffic efficiency on the network and improved safety in terms of incident response and mitigation measures."

Lina Konstantinopoulou - ERTICO - ITS Europe



"Deploying the TM 2.0 concept results in a win-win cooperation of traffic management centres and information services providers with clear benefits for customers involving all transportation modes."

Karl Rehrl, Federal State of Salzburg



"TM2.0 is not only about next traffic management collaborative paradigm, but also about opening new business challenges that the need to be tackled with new forms of synergies among main categories of stakeholders in the mobility field – boasting complementary knowledge, data and skills – in a completely interconnected environment."

Laura Cocone, Swarco



"We are fast proceeding towards an evolved system of Traffic Management that involves all stakeholders and respects their needs. Based on a common belief in the value of interactive Traffic Management, TM 2.0 members work on new Business models and think out of the box."

Johanna Tzanidaki, TomTom



"The open and productive sharing of ideas leads us to new insights in how road operators and service providers can strengthen each other by exchanging Traffic Management information."

Jop Spoelstra, Technolution



"TM 2.0 is the reaction on disruptive changes related to future of mobility, which started already. Connected and cooperative mobility based on TM2.0 will lead to improved safety and higher throughput in transportation networks."

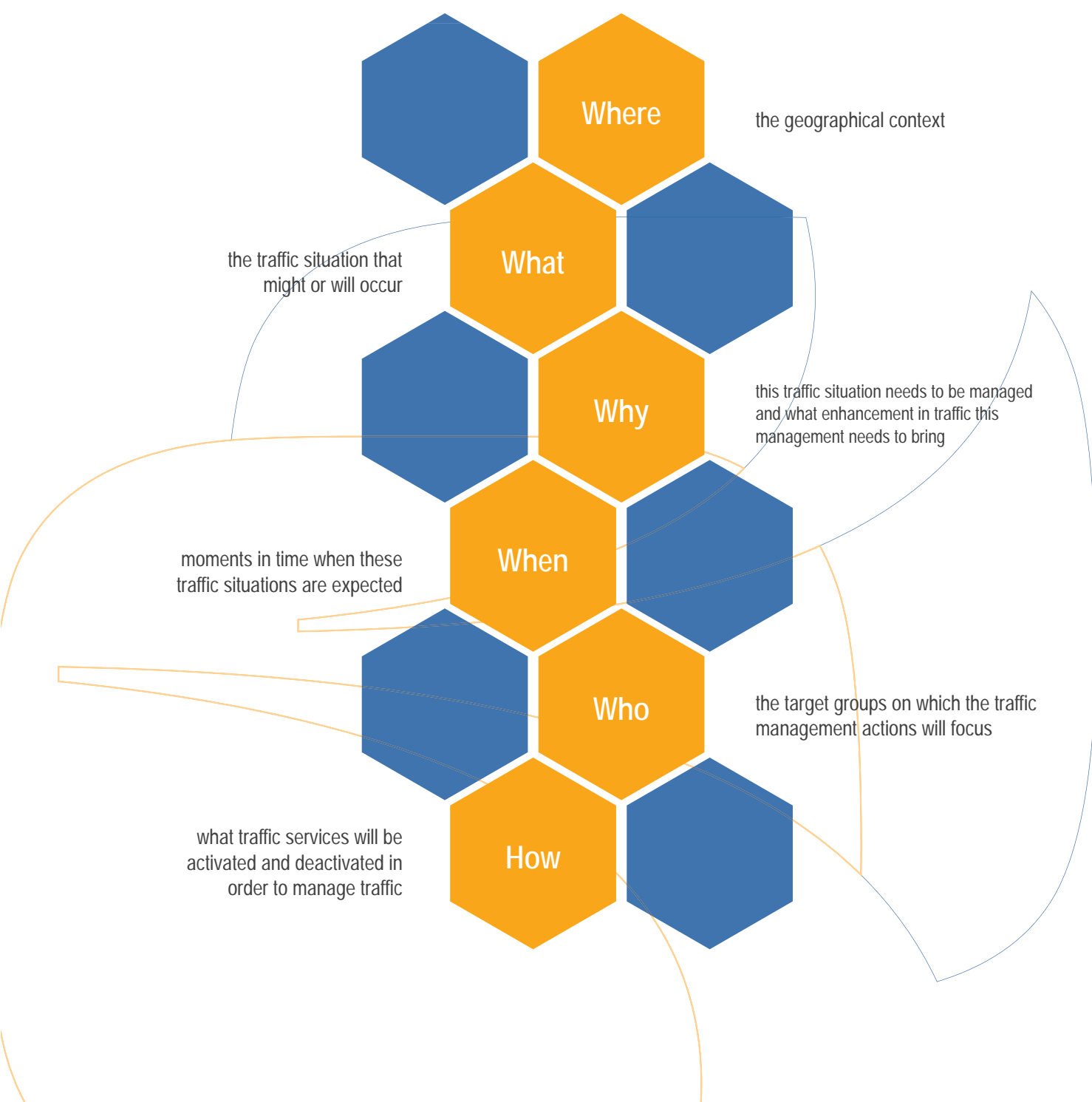
Robert Sykora, Siemens



Traffic Management Plans

Traffic management solutions are often not directly interchangeable between different urban areas or regions. It is, therefore, necessary that they are tailored to local requirements and should be reflective of local priorities and sensitivities. Traffic management requirements often have direct policy implications. Thus policy decision makers will be fully involved in decision making regarding traffic management strategies and actions.

Elements of a Traffic Management Plan



The win-win

All members in the Platform believe that that cross sector collaboration (on both strategic and operational level) can result in a win-win for all actors in the system: road network users, traffic management centres and public authorities and data and infrastructure service providers.

Road network users will benefit from a more relaxed and better informed driving experience by avoiding congestion, receiving relevant information, and improved road safety.

Traffic management centres and public authorities will be able to better manage their traffic flows and avoid traffic collapse and congestion, unnecessary emissions, providing enhanced traffic information accuracy.

Finally, **data and infrastructure** will be able to provide the best route options for their users, provide solutions rather than inform on problems, and be able to provide regional information as a part of an integrated traffic information service.



TM 2.0 Members

Public Authorities



Research



Users



Traffic & Transport



Service Providers



Supplier



Vehicle Manufacturer
















Associations



Task Force on Value proposition (Leader: Federal State of Salzburg) 2015-2016

The TM 2.0 ERTICO Innovation Platform Task Force (TF) on Value Proposition worked on the definition of value within the different ITS stakeholder perspectives. The Task Force consisted of both traffic management representatives and traffic information service providers. Managing traffic efficiently was agreed to be a service and as such it has to service customers' needs rather than just answer general policy related requirements. Delivering state of the art services in traffic management has to focus on responding to the very specific needs faced by the cities and regions where the TM 2.0 is implemented / deployed. In order to assess the diversity of needs, and ensure that the 'win-win' principle is followed, the TF on Value Proposition examined four cities / regions in Europe, namely the city of Thessaloniki, the region of Helmond – Eindhoven – Tilburg, the federal state of Salzburg and the city of Barcelona and assessed their common vision in how TM 2.0 can help in coping with the different challenges in their respective traffic management practices.

Benefits of TM 2.0

City administrators / traffic managers	Drivers	Traffic information service providers
<ul style="list-style-type: none"> avoid congestion and traffic collapse avoid unnecessary emissions improve TMP complementing or replacing loop detectors and enhancing accuracy TMPs measures reach driver directly FCD-enabled TM even in roads with no ITS (scalable)	<ul style="list-style-type: none"> avoid congestion: more relaxed driving receive relevant regional information in-vehicle improved road safety through smoother traffic flow best route options aligned with TMPs	<ul style="list-style-type: none"> provide best route option for the destination (not only fastest) provide information that goes beyond congestion provide solution (best route option) not the problem (congestion info) well in advance regional information becomes part of an integrated service

The TF had its paper accepted for the 11th ITS European Congress, Glasgow. The Task Force on "Value Proposition" has completed its work and has finalised its report in March 2016. A TM 2.0 value proposition for all users and target groups of interactive traffic management is agreed.

Task Force on Quantification of benefits (Leaders: Swarco & TomTom) 2015-2016

Quantifiable benefits and KPIs are essential when building a solid business case for deploying the TM 2.0 concept. The data exchange between Traffic Management Centres (TMCs) and Mobility Service providers (MSPs), has to be able to be assessed and measured so that success can be evaluated. This TF focuses on defining a methodology for the Quantification of Benefits of TM2.0 by simulating TM 2.0 on two specific cities (Verona and Thessaloniki), which are treated as case studies.

The proposed methodology for the assessment of the impact TM 2.0 has with regards to traffic, environmental objectives, and safety, is using microscopic traffic simulation applied to the two cities that exhibit different sets of needs but a common approach to TM (TM 2.0). Interactive traffic management is based on the utilization of real-time traffic information (i.e. floating car data etc.) from traffic management operators for the optimization of the network performance. Thus, a dynamic micro simulation model is being developed for the evaluation of the effects of different traffic regulation schemes. For example, updated traffic signals and other traffic measures are being deployed in modeling and micro simulation in order to effectively quantify the benefits of TM 2.0 for all users and stakeholders.

The two case-studies this TF is focusing its work on are the city of Thessaloniki and the city of Verona. The results of this TF and the methodology proposed on the quantification of benefits is envisaged to be applicable to all TM 2.0 cities and regions.

With respect to the case-study of Thessaloniki focus was placed on the assessment of the performance of interactive traffic management in the case of imposed traffic restrictions on the road network around a construction site. Dynamic traffic assignment was implemented to replicate interactive traffic management operations during the simulated experiments. On the contrary, static traffic assignment was selected to represent traffic operations with no existing communication between Traffic Management Centers (TMC) and Mobility Service Providers (MSP). The simulation analysis indicated that the deployment of the interactive traffic management (TM 2.0) has a profound impact both on traffic operations and the environment on the network level. Average network delay decreases by 15.5% compared to the "do-nothing" scenario. Interactive traffic management yielded substantial benefits with respect to CO₂ emissions. They decreased by 6.4% compared to the static traffic assignment case. Moreover, results indicated that the provision of information to the drivers with respect to the implemented restrictions increases the average speed on selected arterials, and decreases CO₂ emissions. Overall, interactive traffic management impacts positively the operation of the network both at local and network-wide level.

The work of this TF is ongoing and will be completed in June where a Paper has been accepted to be presented on the outcomes of its work.

Task Force on Role of Automation in Traffic Management (Leader: ICCS) 2015-2016

Automation along the entire chain of road transportation and services will play a key role in future transport systems. Traffic Management has to be ready to accommodate the circulation of automated vehicles. The main objective of this TF is to assess how the gradual road presence of automated vehicles, at automation level 3 and above, will affect the current Traffic Management practices. Another objective is to analyse how new Traffic Management practices can facilitate the smooth integration of automated vehicles in real traffic, while gaining the maximum benefits from this introduction. Moreover, the TM 2.0 TF aims to explore the interaction between Traffic Management, automated vehicles and human drivers. The TF works under the principle that in order to establish an efficient and valuable interaction, “both ends” of the Traffic Management chain need to be prepared to communicate not only in the same language but also on the basis of similar technical and functional quality levels.

A survey was conducted initially among the members of the TF, and then expanded to external stakeholders. The survey revealed that road automation is expected to enable the provision of more reliable, effective and efficient Traffic Management services, which will increase road safety and efficiency and enhance environmental protection. Still, high quality, detailed data of the current status of the road network and of the whole transport system should be always available, covering the whole road network. The survey showed that traffic environment should be harmonised, while data privacy and security should be also safeguarded. New communication means for automated vehicles should be conceptualised and designed, replacing the traditional communication means that took the presence of human drivers for granted, and this may require changes in the physical infrastructure as well.

The Task Force on “Role of Automation in Traffic Management” has finalised its first phase report. The second phase of work of this TF currently focuses on requirements for Traffic Management Centres and Infrastructure and analyses specific use cases involving mixed traffic in urban and highway environments.

Task Force on Exchange of Traffic management Plans (Leader: Technolution & Siemens) 2015-2016

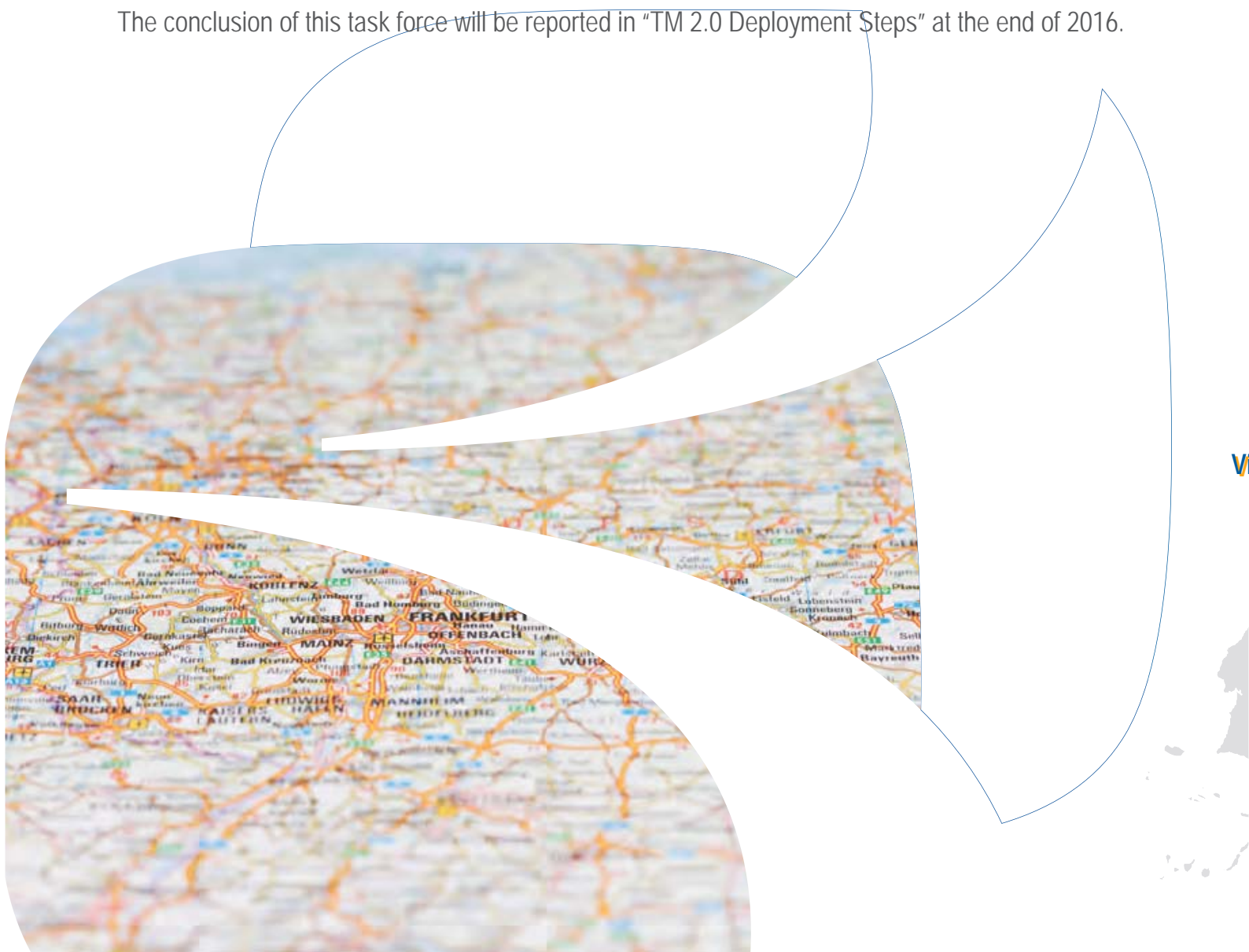
The TM 2.0 Task Force on the exchange of Traffic Management Plans (TMPs) aims to enable, facilitate and accelerate the information exchange among traffic management stakeholders and in particular the access to policy and strategy based plans and actions as these are set by the public authorities and road operators. The TM2.0 taskforce on the exchange of TMPs aimed to define what is included in traffic management plans (decisions, procedures and strategies), and how these should be exchanged. The TF succeeded in defining what traffic management plans encompass, which stakeholders are involved in exchanging these plans, and described current pilot cases of exchange of TMPs between service providers and infrastructure operators. The TF found that traffic management solutions are often not directly exchangeable among different urban areas or regions due to differences in local requirements, priorities, sensitivities but also due to differences in technical capabilities, infrastructure and lack of standards. Ideas on how these traffic management plans are to be exchanged and how these procedures might work must incorporate these versatile aspects of TM2.0. Currently the TF is identifying case studies so that TISA can help with the work on specs and standards needed. Specs and standards are of course beyond the scope of this TF and of the TM 2.0 Platform. The TF will only attempt to define the relevant case studies where gaps are seen and where TISA can be seen as contributor.

Task Force on Deployment steps (Leader: ERTICO) 2015-2016






This Task Force supports the steps that need to be taken towards the concrete deployment of the TM 2.0 concept in selected geographical areas. The TM 2.0 platform does not engage itself in the deployment tasks but supports the TM 2.0 members and candidate areas by providing an agreed plan and approach from selection phase for the city or region of TM 2.0 deployment to studying the benefits. During 2014 the TF defined the key criteria required for the selection of a TM 2.0 deployment area in cooperation with the mobility service actors and road operators. During 2015, the TF has been investigating the kind of cities or regions that are already deploying services that are seen as very relevant for TM 2.0 and engaged in discussions with several cities, some of which are already operating cooperative ITS services and have integrated them existing systems for traffic management..

This task force is currently working on better identifying what are the factors that are essential to trigger an interest in interactive management of that sort from regions, corridors, and urban agglomerations. The TF will be interacting with the different local and regional actors to understand the steps that will be needed to convince the decision makers to engage in cooperation between Traffic Management and Mobility Services.

The conclusion of this task force will be reported in "TM 2.0 Deployment Steps" at the end of 2016.



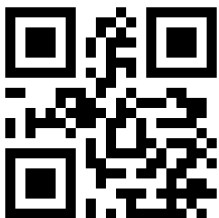
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